

Prospective and Retrospective Studies

by Sophia Tutorial



WHAT'S COVERED

This tutorial will explore observational studies and how they are conducted. We will also cover experiments, which are a little different than observational studies, through the exploration of:

1. Observational Studies
2. Types of Observational Studies
 - a. Prospective Study
 - b. Retrospective Study

1. Observational Studies

An **observational study** is a type of study where the researcher can observe but does not administer any treatment. Therefore, whatever would normally happen, the researcher has to allow it to happen.

Researchers can't change anything about the people or subjects they are studying. The researcher can record the variables of interest, but again, can't affect the study. People have to be allowed to do whatever it is they were going to do without interruption.



TERM TO KNOW

Observational Study

A type of study where researchers can observe the participants, but not affect the behavior or outcomes in any way.

2. Types of Observational Studies

There are two types of observational studies:

2a. Retrospective Study

Retrospective Study, also known as a case-control study. Researchers look to the past to see what has already happened.

It can be similar to a matched-pair design in an experiment, but in this case, the researchers are not giving a treatment or doing anything to affect the people.

🔗 **EXAMPLE** In a study, suppose you take a pair of participants, who are similar across most variables except for one major difference -- one participant has a disease, "the case", and one participant who does not have a disease, "the control". Because the participants are so similar, you are focusing on just that disease and seeing how it affects the participants or what causes the disease.

This is considered retrospective because it looks in the past. You ask the participants to recall past events or use information about their past to determine what risk factors there are for the disease.



TERM TO KNOW

Retrospective Study

A study that observes what happened to the subjects in the past, in an effort to understand how they became the way they are in the present.

2b. Prospective Study

Prospective Study, also known as a longitudinal study, occurs over a long period of time. It observes the same set of people and follows the same variables over that chunk of time. It can be as many as several decades. While this type of study is not quick to do, it provides a lot of data and many different researchers can use this information in a variety of ways.

🔗 **EXAMPLE** The Framingham Heart Study started in 1948 and is still going on today. 5,209 healthy adults from Framingham enrolled in this study. Researchers collected a variety of information about the subjects, including social networks, eating habits, exercise habits, and several markers for heart health.

Over a thousand different research papers have been written using this information. Some of these papers have proven that obesity and smoking increase the risk of heart failure. Other papers look at how the social networks tie to obesity risks.



TERM TO KNOW

Prospective Study

A study that begins by selecting participants, tracking them, and keeping data on the subjects as they go into the future.

Subjects/Participants

The people or things being examined in an observational study.



SUMMARY

An observational study is a type of study where the researcher can observe but not influence the behavior of the participants, or subjects. A retrospective study involves looking back at behavior, while a prospective study involves gathering your participants and following them along as they live their lives. An observational study, though, cannot prove a cause-and-effect relationship

Good luck!

Source: This work is adapted from sophia author jonathan osters.



TERMS TO KNOW

Experiment

A type of study where researchers impose treatments on the participants or experimental units.

Experimental Unit

An animal or thing involved in an experiment.

Observational Study

A type of study where researchers can observe the participants, but not affect the behavior or outcomes in any way.

Prospective Study

A study that begins by selecting participants, then tracks them and keeps data on the subjects as they go into the future.

Retrospective Study

A study that observes what happened to the subjects in the past, in an effort to understand how they became the way they are in the present.

Subjects/Participants

The people or things being examined in an observational study.